Demonstration of Communication Performance Measurement of Individuals who use AAC

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Agenda

- Applying the principles of evidence-based practice to optimize communication performance for people who use AAC
- Language sampling and performance measurement tools and resource
- Demonstration – collecting and analyzing a language sample using LAM and PeRT

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What's Important in AAC?

The goal of AAC is the most effective communication possible.

The two most important values expressed by people who rely on AAC are:

1) saying exactly what they want to say, and
2) saying it as fast as they can.

AAC service delivery must honor these values.

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4 Steps of Evidence-Based Practice

- Step 1:
Asking Meaningful EBP Questions
- Step 2:
Locating and reviewing the External Evidence
- Step 3:
Collecting and reviewing the Personal Evidence
- Step 4:
Using the Evidence for Assessment and Intervention

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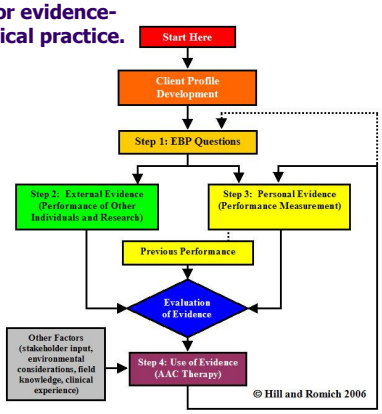
A model for evidence-based clinical practice.



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Evidence-Based Practice, Language Sampling and Language Activity Monitoring

- EBP Step 3: Collecting and Reviewing the Personal Evidence
- EBP Step 4: Using the Evidence for Assessment and Intervention – monitoring change
- Efficient and effective tools are available to support quantitative data collection for EBP Steps 3 & 4.

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The most effective therapy is based on the collection and analysis of language samples.

Yet, until recently this was rarely done.

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Why?

- Better outcomes.
  - Having documentation can help tweak things to increase communication rate or reach the next step in language development.
- Take control of your own communication.
  - Deciding what YOU can do to improve your own communication skills is a part of achieving independence.

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Language Activity Monitoring (LAM)

- LAM tools were developed to support the collection and analysis of language samples.
- The LAM function is the automatic recording of AAC device language events.
  - Content (One or more letters or words)
  - Time (One second resolution time stamp)
- The LAM feature is built-into modern AAC devices.
  - Prentke Romich Company
  - Dynavox Systems

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LAM tools can monitor: Core & Extended Vocabulary

- Core
  - **Vast majority of what we say**
  - **85% or a few hundred words**
  - **Determiners, verbs, adjectives, prepositions, pronouns (not picture producers)**
  - **May have specific pragmatic functions**
- Extended
  - **Fringe or situation specific nouns**
  - **15% of word use usually associated with a topic**
  - **May have specific pragmatic functions in conversation**

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LAM tools can monitor: AAC Language Representation Methods

- Methods used in AAC
  - Single Meaning Pictures
  - Alphabet-based
    - Spelling
    - Word prediction
    - Letter coding
    - Orthographic word selection
  - Semantic Compaction

Note: Anyone not familiar with the basic AAC language representation methods can learn more through the free AAC Institute Self-Study Program course on this topic.

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Procedures for Collecting Language Samples

- Controlled protocols
  - Picture description
  - Interview
  - Story retelling
  - Conversation
  - Therapy activity
  - Reliability for clinical sampling conditions reported in several studies.
- Natural environment
  - Advantages and disadvantages

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When we know

the content of language events
and the time of language events,
we can deduce how
communication is generated
and measure many parameters.

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LAM Recording Protocol

- EXAMPLE: From actual logged sample interview
- **"It's faster than spelling everything out which is what I used to do "**

```
16:26:05 SEM "It's "      16:26:48 SPE "g"
16:26:08 SEM "faster "    16:26:49 SPE " "
16:26:14 SEM "than "      16:26:58 SEM "everything "
16:26:41 SPE "sp"         16:27:02 SEM "out "
16:26:42 SPE "e"          16:27:05 SEM "which "
16:26:45 SPE "l"          16:27:08 SEM "is "
16:26:45 SPE "l"          16:27:11 SEM "what "
16:26:46 SPE "i"          16:27:14 SEM "I "
16:26:47 SPE "n"          16:27:19 SEM "used "
                          16:27:22 SEM "to do "
```

LAM implementations

1. LAM FUNCTION

Built-in feature in modern high performance AAC systems.

2. U-LAM SOFTWARE

- Universal Language Activity Monitor
- Allows PC to act as LAM with serial port AAC devices as well as audio recording and keyboard-entered text.
- A product of AAC Institute **(www.aacinstitute.org)**
- Set-up for PRC and Dynavox devices: **www.aacinstitute.org**
  (click on Language Sample Collection)

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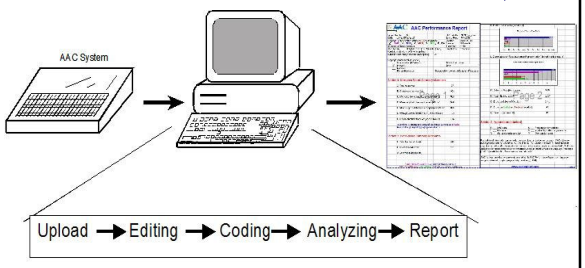
Diagram of LAM process



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Demonstration: LAM and U-LAM*

(Thank you, Anthony Arnold)

- Pathfinder into U-LAM
  - Serial port connection to computer running U-LAM
  - PF serial output must be turned on and baud rate set
- LAMterm
  - Uploads LAM record from Pathfinder into computer
  - PF serial output must be turned on and baud rate set

* Universal Language Activity Monitor

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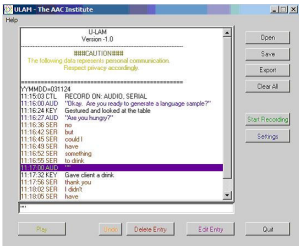
Collect using U-LAM



Analyze using PeRT

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Viewing and Analyzing Language Samples

- LAM data is recorded and saved as a text file. This allows viewing in any common word processing program.
- Caution: Some logfile methods may not allow independent viewing of the recorded data.

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AAC Performance Report

- The AAC Performance Report includes seventeen quantitative summary measures of communication performance.
- PeRT (**Pe**rformance **R**eport **T**ool) is software that facilitates the creation of the AAC Performance Report
  - A product of AAC Institute
  - <www.aacinstitute.org>

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AAC Performance Report

Subject Number:	123			LAM data file:	010321_1_in_anon
DOB:	2 May 1977 (Age 23)			Date of Report:	15-Mar-01
Language Representation Methods: (*check all available*)				Location:	Wooster, OH
_X_ SMP; _X_ SEM; _X_ WPR; _X_ SPE; _X_ OWS*				Examiner:	B. Romich
Selection technique:	Keyboard			Transcriber:	K. Hill
AAC System:	Unity 128 (12 mo.) on Pathfinder (5 mo.)			Sample time:	57 minutes
Number of selections per letter in spelling:		1			
Number of total array selections when spelling:		128			
Language Sample Context (*check*)					
___	Conversation (# Partners ___)		___	Natural Environment	
_X_	Interview		___	Other: _____	
___	Narrative				
___	Picture description		* Conducted remotely via AOL Instant Messenger		

* SMP = Single Meaning Pictures; SEM = SEMantic Compaction
WPR = Word PRediction; SPE = SPElling; OWS = Orthographic Word Selection

Section 1: Utterance-Based Summary Measures

A. Total utterances	27
B. Complete utterances (%)	100%
C. Method of Generating Utterances (SNUG %)	100%
D. Mean Length of Utterance in Words (MLU-w)	16.48
E. Mean Length of Utterance in Morphemes (MLU-m)	18.30
F. Average Communication Rate (words / minute)	11.75
G. Peak Communication Rate (words / minute)	14.07

everything is remembered by myself and I/'m actually my Unity teacher because I taught myself by play/ing around with it

* SMP = Single Meaning Pictures; SEM = SEMantic Compaction
WPR = Word PRediction; SPE = SPElling; OWS = Orthographic Word Selection

Section 2: Word-Based Summary Measures

H. Total Number of Words	440
I. Different Word Roots	175
J. Core Vocabulary Use (%)	85

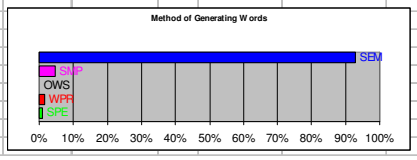
PeRT General Core Vocabulary List
040102 Version
BAR/KJH

	Word	Root Word	Bound Morphemes
1	a	a	
2	about	about	
3	actual	actual	
4	actually	actual	1
5	after	after	
6	all	all	
7	always	always	
8	an	an	
9	and	and	
10	another	another	
11	any	any	
12	anybody	anybody	
13	anyhow	anyhow	
14	anyone	anyone	
15	anything	anything	
16	anyway	anyway	
17	anywhere	anywhere	
18	are	are	
19	aren't	are	1
20	around	around	
21	as	as	
22	at	at	
23	ate	eat	

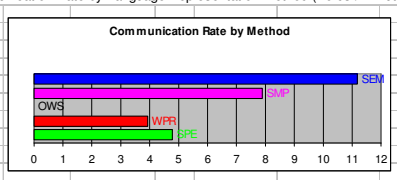
Section 2: Word-Based Summary Measures

H. Total Number of Words	440
I. Different Word Roots	175
J. Core Vocabulary Use (%)	85

K. Method of Generating Words (%)



L. Communication Rate by Language Representation Method (words / minute)



M. Selection Rate (bits / second)	5.25
N. Rate Index (words / bit)	0.037
O. Errors per Selected Word (%)	2.3%
P. Errors per Spelled and Predicted Word (%)	0%
Q. Deletions per error (%)	0%

Section 3: Appendices (attached)

R. ___ LAM data	U. ___ Frequency order word list
S. ___ Utterances	V. ___ Word list by method of generation
T. ___ Alphabetic order word list	W. ___ Text version report

For additional information on methods, tools, services, and evidence to support AAC evidence-based practice, visit the web site of the AAC Institute. AAC Institute is a not-for-profit charitable organization dedicated to the most effective communication for people who rely on AAC. Additional analyses of language samples can be performed using Systematic Analysis of Language Transcripts (S.A.L.T.) available at http://www.waisman.wisc.edu/salt/.

AAC Institute provides the service of generating this AAC Performance Report from language samples collected using language activity monitoring (LAM).

www.aacinstitute.org 030818

A:/030816_5_co_smit_APPENDICES/Frequency word list.txt

Word #	Word	# of Occurrences	%	Cumulative %
1	i	7	7.4%	7.4%
2	to	5	5.3%	12.6%
3	you	4	4.2%	16.8%
4	my	3	3.2%	20.0%
5	wp	3	3.2%	23.2%
6	didn't	2	2.1%	25.3%
7	it	2	2.1%	27.4%
8	me	2	2.1%	29.5%
9	need	2	2.1%	31.6%
10	that	2	2.1%	33.7%
11	the	2	2.1%	35.8%
12	this	2	2.1%	37.9%
13	what	2	2.1%	40.0%
14	actually	1	1.1%	41.1%
15	and	1	1.1%	42.1%
16	announcement	1	1.1%	43.2%
17	batteries	1	1.1%	44.2%
18	before	1	1.1%	45.3%
19	better	1	1.1%	46.3%
20	charge	1	1.1%	47.4%
21	could	1	1.1%	48.4%
22	did	1	1.1%	49.5%
23	do	1	1.1%	50.5%
24	don't	1	1.1%	51.6%

AAC Institute

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PeRT

Performance Report Tool

Version 1.01
February 2004

Loading …

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Demonstration: PeRT (Performance Report Tool)

1) Opening a LAM file
2) PeRT screen
3) Segmenting Utterances
4) Creating the AAC Performance Report
5) Appendices

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Learning to Use PeRT

The AAC Institute web site offers a free self-study course on the AAC Performance Report. One module is devoted to learning to use PeRT. CEUs are available without cost.

AAC Institute has been reviewed and approved as an Authorized Provider by the International Association for Continuing Education and Training (IACET), 1620 I Street, NW, Suite 615, Washington, DC 20006. AAC Institute has awarded *0.4* CEUs to participants who successfully complete this program.

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LAM routine at home



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What we learn:

- When we see something being taught in therapy, and then attempted later on in the day, we know learning is occurring!
- We can check to see if access has changed. A drop in accuracy or speed can help to document a change in physical status.
- We can see what types of words to work on next.

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AAC Institute

- **People who rely on AAC, their families and friends**
- **Professionals and Educators**
- **Researchers, Developers, and Manufacturers**
- **Funding and other Parties**

www.aacinstitute.org

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AAC Institute

Sixth International Symposium on AAC Evidence-Based Practice: Literacy, Language and AAC

June 13 - 14, 2008

Sheraton Station Square
Pittsburgh, PA

Details and registration information coming soon at:
www.aacinstitute.org

Please feel free to contact us

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